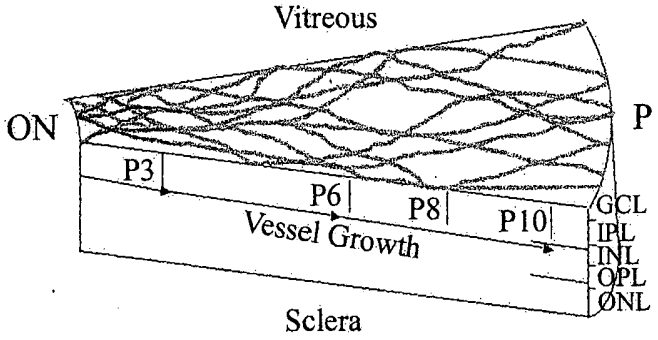
A


Vitreous
ON
P
P3
P6
P8
P10
Vessel Growth
GCL
IPL
INL
OPL
ONL
Sclera

B

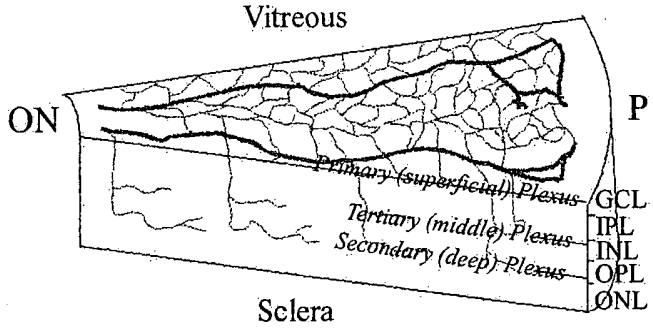

Vitreous
ON
P
Primary (superficial) Plexus
Tertiary (middle) Plexus
Secondary (deep) Plexus
GCL
IPL
INL
OPL
ONL
Sclera

FIG. 1

C

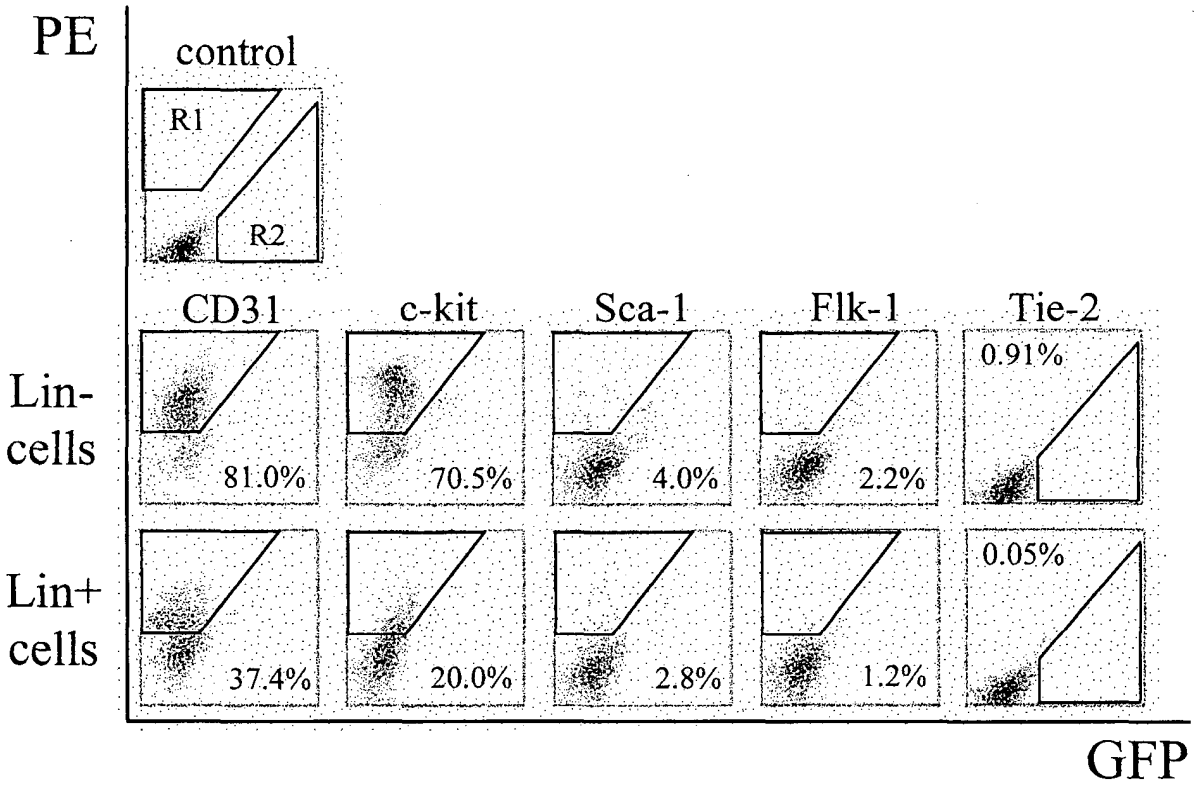

PE
control
R1
R2
CD31
c-kit
Sca-1
Flk-1
Tie-2
Lin-
cells
81.0%
70.5%
4.0%
2.2%
0.91%
Lin+
cells
37.4%
20.0%
2.8%
1.2%
0.05%
GFP

FIG. 1 Cont.

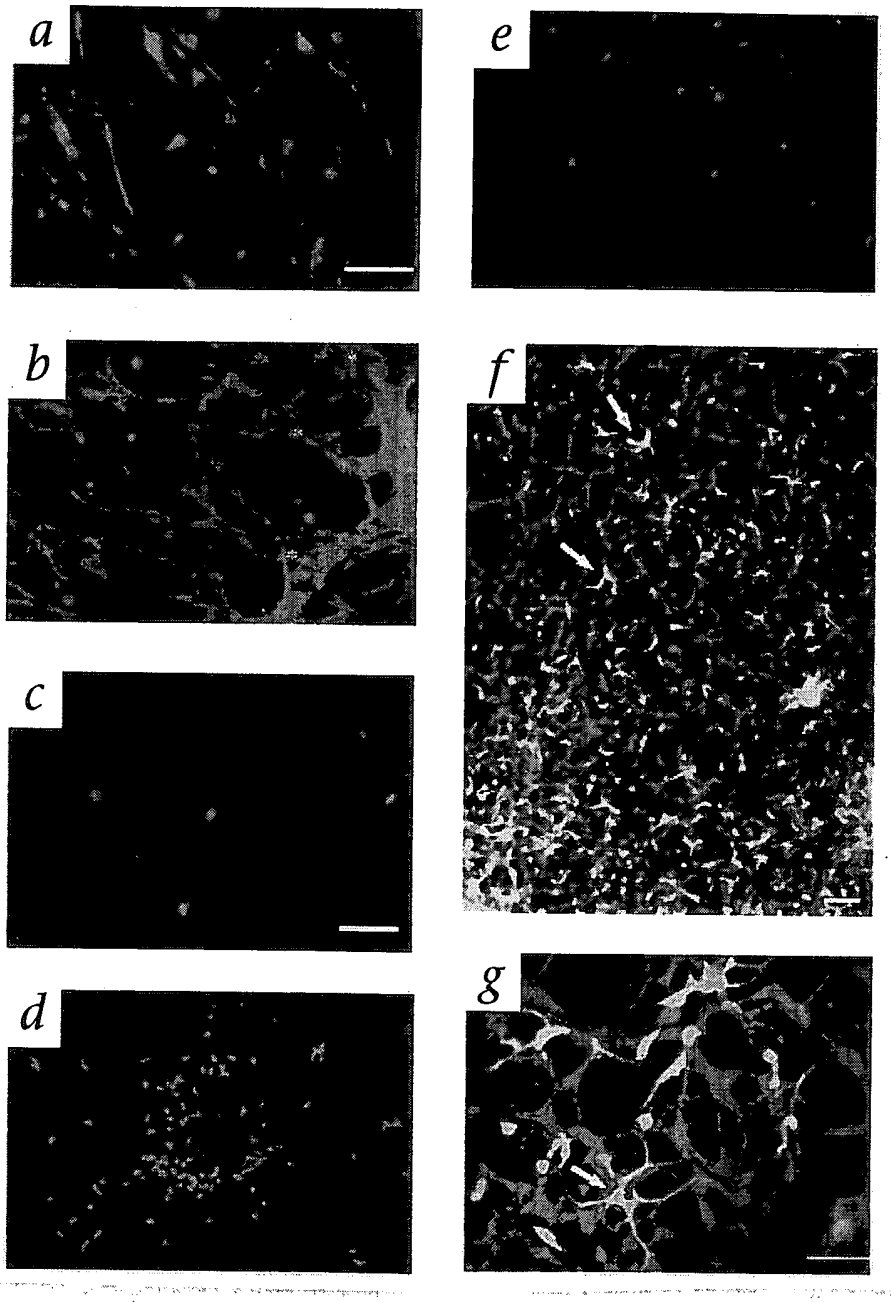


FIG. 2

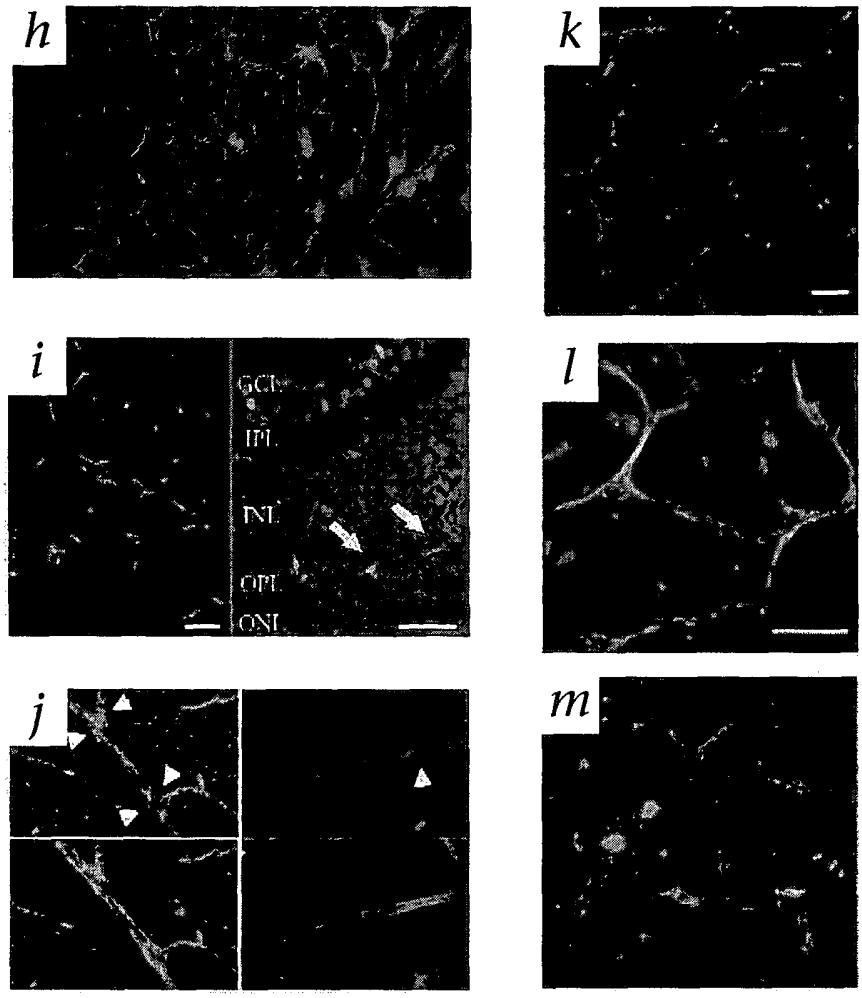


FIG. 2 Cont.

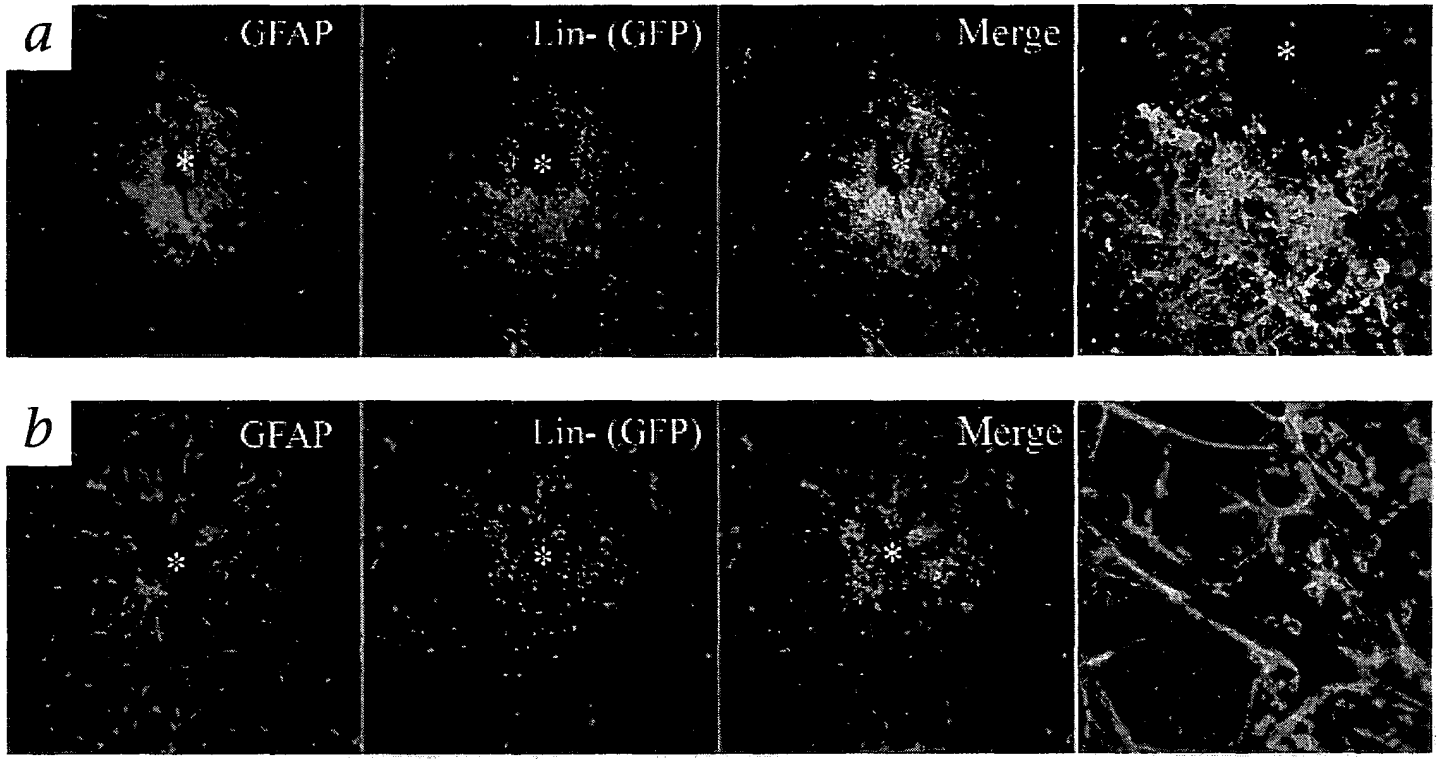


FIG. 3

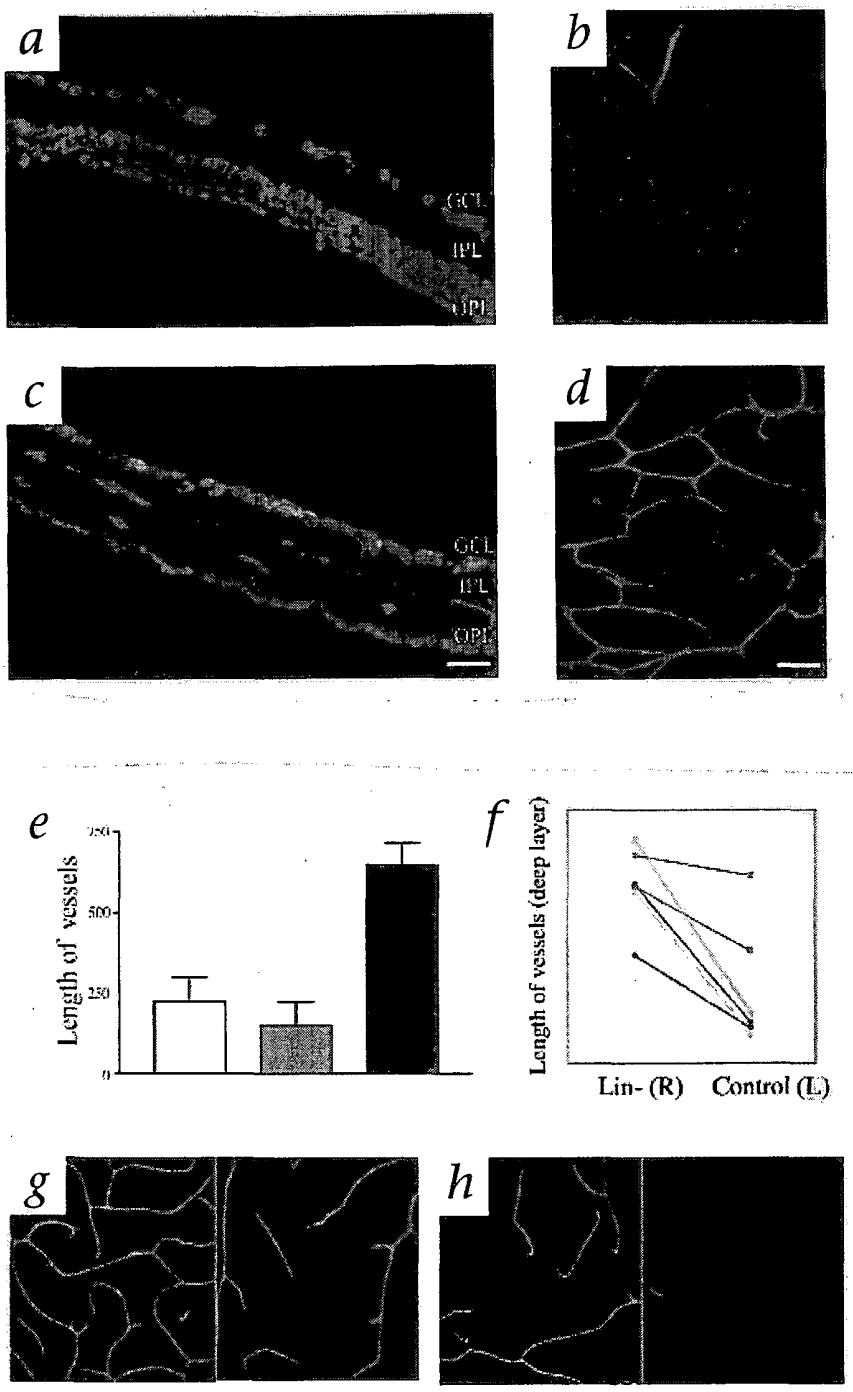

a
GCL
IPL
OPL
b
c
GCL
IPL
OPL
d
e
Length of vessels
0
250
500
f
Length of vessels (deep layer)
Lin- (R)
Control (L)
g
h

FIG. 4

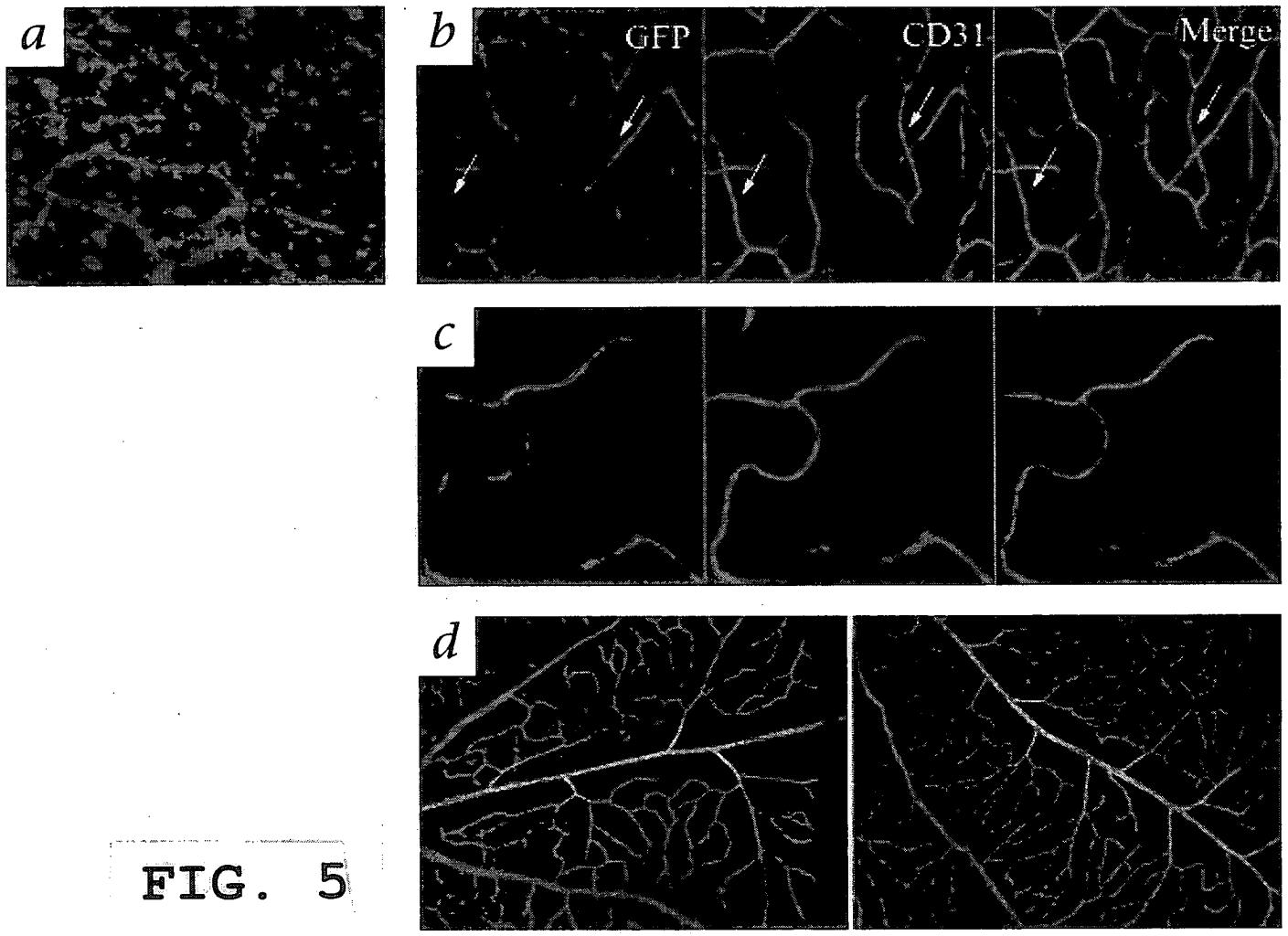


FIG. 5

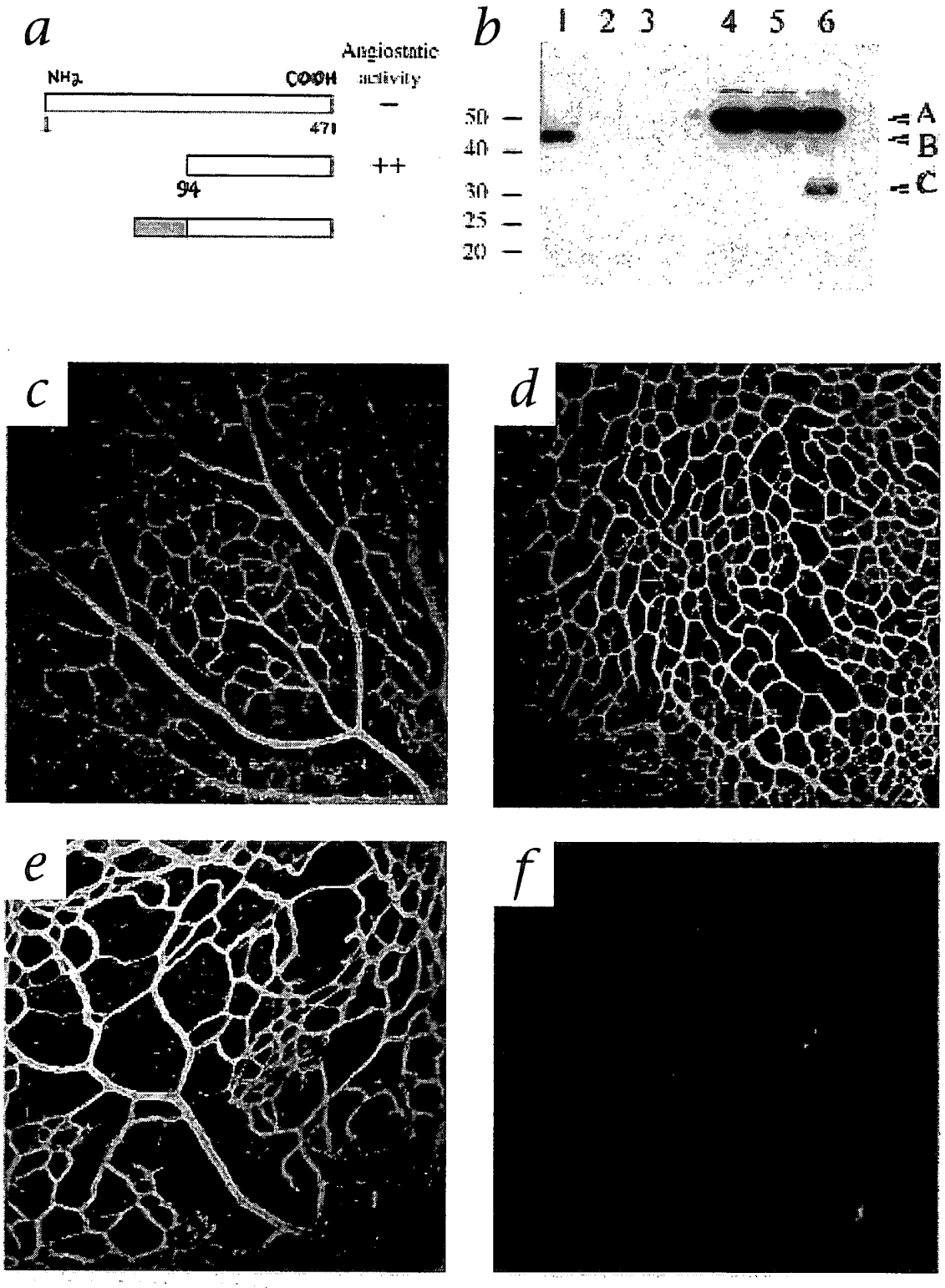

a
Angiostatic activity
NH2
COOH
1
471
94
++
b
1 2 3 4 5 6
50
40
30
25
20
A
B
C
c
d
e
f

FIG. 6

DNA encoding His-tagged T2 fragment of human TrpRS

```
tggcgaatgg gacgcgccct gtagcggcgc attaagcgcg gcgggtgtgg tggttacgcg 60
cagcgtgacc gctacacttg ccagcgccct agcgcccgct cctttcgctt tcttcccttc 120
ctttctcgcc acgttcgccg gctttccccg tcaagctcta aatcgggggc tccctttagg 180
gttccgattt agtgctttac ggcacctcga ccccaaaaaa cttgattagg gtgatggttc 240
acgtagtggg ccatcgccct gatagacggt ttttcgccct ttgacgttgg agtccacgtt 300
ctttaatagt ggactcttgt tccaaactgg aacaacactc aaccctatct cggtctattc 360
ttttgattta taagggattt tgccgatttc ggcctattgg ttaaaaaatg agctgattta 420
acaaaaattt aacgcgaatt ttaacaaaat attaacgttt acaatttcag gtggcacttt 480
tcggggaaat gtgcgcggaa cccctatttg tttatttttc taaatacatt caaatatgta 540
tccgctcatg agacaataac cctgataaat gcttcaataa tattgaaaaa ggaagagtat 600
gagtattcaa catttccgtg tcgcccttat tccctttttt gcggcatttt gccttcctgt 660
ttttgctcac ccagaaacgc tggtgaaagt aaaagatgct gaagatcagt tgggtgcacg 720
agtgggttac atcgaactgg atctcaacag cggtaagatc cttgagagtt ttcgccccga 780
agaacgtttt ccaatgatga gcacttttaa agttctgcta tgtggcgcgg tattatcccg 840
tattgacgcc gggcaagagc aactcggtcg ccgcatacac tattctcaga atgacttggt 900
tgagtactca ccagtcacag aaaagcatct tacggatggc atgacagtaa gagaattatg 960
cagtgctgcc ataaccatga gtgataacac tgcggccaac ttacttctga caacgatcgg 1020
aggaccgaag gagctaaccg ctttttgca caacatgggg gatcatgtaa ctcgccttga 1080
tcgttgggaa ccggagctga atgaagccat accaaacgac gagcgtgaca ccacgatgcc 1140
tgcagcaatg gcaacaacgt tgcgcaaact attaactggc gaactactta ctctagcttc 1200
ccggcaacaa ttaatagact ggatggaggc ggataaagtt gcaggaccac ttctgcgctc 1260
ggcccttccg gctggctggt ttattgctga taaatctgga gccggtgagc gtgggtctcg 1320
cggtatcatt gcagcactgg ggccagatgg taagccctcc cgtatcgtag ttatctacac 1380
gacggggagt caggcaacta tggatgaacg aaatagacag atcgctgaga taggtgcctc 1440
actgattaag cattggtaac tgtcagacca agtttactca tatatacttt agattgattt 1500
aaaacttcat ttttaattta aaaggatcta ggtgaagatc ctttttgata atctcatgac 1560
caaaatccct taacgtgagt tttcgttcca ctgagcgtca gaccccgtag aaaagatcaa 1620
aggatcttct tgagatcctt tttttctgcg cgtaatctgc tgcttgcaaa caaaaaaacc 1680
accgctacca gcggtggttt gtttgccgga tcaagagcta ccaactcttt ttccgaaggt 1740
aactggcttc agcagagcgc agataccaaa tactgtcctt ctagtgtagc cgtagttagg 1800
ccaccacttc aagaactctg tagcaccgcc tacatacctc gctctgctaa tcctgttacc 1860
agtggctgct gccagtggcg ataagtcgtg tcttaccggg ttggactcaa gacgatagtt 1920
accggataag gcgcagcggt cgggctgaac gggggttcg tgcacacagc ccagcttgga 1980
gcgaacgacc tacaccgaac tgagatacct acagcgtgag ctatgagaaa gcgccacgct 2040
tcccgaaggg agaaaggcgg acaggtatcc ggtaagcggc agggtcggaa caggagagcg 2100
cacgagggag cttccagggg gaaacgcctg gtatctttat agtcctgtcg ggtttcgcca 2160
cctctgactt gagcgtcgat ttttgtgatg ctcgtcaggg gggcggagcc tatggaaaaa 2220
cgccagcaac gcggcctttt tacggttcct ggccttttgc tggccttttg ctcacatgtt 2280
ctttcctgcg ttatcccctg attctgtgga taaccgtatt accgcctttg agtgagctga 2340
taccgctcgc cgcagccgaa cgaccgagcg cagcgagtca gtgagcgagg aagcggaaga 2400
gcgcctgatg cggtattttc tccttacgca tctgtgcggt atttcacacc gcatatatgg 2460
tgcactctca gtacaatctg ctctgatgcc gcatagttaa gccagtatac actccgctat 2520
cgctacgtga ctgggtcatg gctgcgcccc gacacccgcc aacacccgct gacgcgccct 2580
gacgggcttg tctgctcccg gcatccgctt acagacaagc tgtgaccgtc tccgggagct 2640
gcatgtgtca gaggttttca ccgtcatcac cgaaacgcgc gaggcagctg cggtaaagct 2700
catcagcgtg gtcgtgaagc gattcacaga tgtctgcctg ttcatccgcg tccagctcgt 2760
tgagtttctc cagaagcgtt aatgtctggc ttctgataaa gcgggccatg ttaagggcgg 2820
ttttttcctg tttggtcact gatgcctccg tgtaaggggg atttctgttc atgggggtaa 2880
tgataccgat gaaacgagag aggatgctca cgatacgggt tactgatgat gaacatgccc 2940
ggttactgga acgttgtgag ggtaaacaac tggcggtatg gatgcggcgg gaccagagaa 3000
aaatcactca gggtcaatgc cagcgcttcg ttaatacaga tgtaggtgtt ccacagggta 3060
gccagcagca tcctgcgatg cagatccgga acataatggt gcagggcgct gacttccgcg 3120
tttccagact ttacgaaaca cggaaaccga agaccattca tgttgttgct caggtcgcag 3180
acgttttgca gcagcagtcg cttcacgttc gctcgcgtat cggtgattca ttctgctaac 3240
cagtaaggca accccgccag cctagccggg tcctcaacga caggagcacg atcatgcgca 3300
```

FIG. 7

```
cccgtggcca ggacccaacg ctgcccgaga tctcgatccc gcgaaattaa tacgactcac 3360
tatagggaga ccacaacggt ttccctctag aaataatttt gtttaacttt aagaaggaga 3420
tatacat atg agt gca aaa ggc ata gac tac gat aag ctc att gtt cgg   3469
ttt gga agt agt aaa att gac aaa gag cta ata aac cga ata gag aga   3517
gcc acc ggc caa aga cca cac cac ttc ctg cgc aga ggc atc ttc ttc   3565
tca cac aga gat atg aat cag gtt ctt gat gcc tat gaa aat aag aag   3613
cca ttt tat ctg tac acg ggc cgg ggc ccc tct tct gaa gca atg cat   3661
gta ggt cac ctc att cca ttt att ttc aca aag tgg ctc cag gat gta   3709
ttt aac gtg ccc ttg gtc atc cag atg acg gat gac gag aag tat ctg   3757
tgg aag gac ctg acc ctg gac cag gcc tat ggc gat gct gtt gag aat   3805
gcc aag gac atc atc gcc tgt ggc ttt gac atc aac aag act ttc ata   3853
ttc tct gac ctg gac tac atg ggg atg agc tca ggt ttc tac aaa aat   3901
gtg gtg aag att caa aag cat gtt acc ttc aac caa gtg aaa ggc att   3949
ttc ggc ttc act gac agc gac tgc att ggg aag atc agt ttt cct gcc   3997
atc cag gct gct ccc tcc ttc agc aac tca ttc cca cag atc ttc cga   4045
gac agg acg gat atc cag tgc ctt atc cca tgt gcc att gac cag gat   4093
cct tac ttt aga atg aca agg gac gtc gcc ccc agg atc ggc tat cct   4141
aaa cca gcc ctg ttg cac tcc acc ttc ttc cca gcc ctg cag ggc gcc   4189
cag acc aaa atg agt gcc agc gac cca aac tcc tcc atc ttc ctc acc   4237
gac acg gcc aag cag atc aaa acc aag gtc aat aag cat gcg ttt tct   4285
gga ggg aga gac acc atc gag gag cac agg cag ttt ggg ggc aac tgt   4333
gat gtg gac gtg tct ttc atg tac ctg acc ttc ttc ctc gag gac gac   4381
gac aag ctc gag cag atc agg aag gat tac acc agc gga gcc atg ctc   4429
acc ggt gag ctc aag aag gca ctc ata gag gtt ctg cag ccc ttg atc   4477
gca gag cac cag gcc cgg cgc aag gag gtc acg gat gag ata gtg aaa   4525
gag ttc atg act ccc cgg aag ctg tcc ttc gac ttt cag aag ctt gcg   4573
gcc gca ctc gag cac cac cac cac cac cac tgagatccgg ctgctaacaa     4623
agcccgaaag gaagctgagt tggctgctgc caccgctgag caataactag cataacccct 4683
tggggcctct aaacgggtct tgaggggttt tttgctgaaa ggaggaacta tatccggat  4742
```

FIG. 7 Cont.

His-tagged T2 fragment of human TrpRS

```
Met Ser Ala Lys Gly Ile Asp Tyr Asp Lys Leu Ile Val Arg Phe Gly
 1               5                  10                  15
Ser Ser Lys Ile Asp Lys Glu Leu Ile Asn Arg Ile Glu Arg Ala Thr
            20                  25                  30
Gly Gln Arg Pro His His Phe Leu Arg Arg Gly Ile Phe Phe Ser His
        35                  40                  45
Arg Asp Met Asn Gln Val Leu Asp Ala Tyr Glu Asn Lys Lys Pro Phe
    50                  55                  60
Tyr Leu Tyr Thr Gly Arg Gly Pro Ser Ser Glu Ala Met His Val Gly
65                  70                  75                  80
His Leu Ile Pro Phe Ile Phe Thr Lys Trp Leu Gln Asp Val Phe Asn
                85                  90                  95
Val Pro Leu Val Ile Gln Met Thr Asp Asp Glu Lys Tyr Leu Trp Lys
            100                 105                 110
Asp Leu Thr Leu Asp Gln Ala Tyr Gly Asp Ala Val Glu Asn Ala Lys
        115                 120                 125
Asp Ile Ile Ala Cys Gly Phe Asp Ile Asn Lys Thr Phe Ile Phe Ser
    130                 135                 140
Asp Leu Asp Tyr Met Gly Met Ser Ser Gly Phe Tyr Lys Asn Val Val
145                 150                 155                 160
Lys Ile Gln Lys His Val Thr Phe Asn Gln Val Lys Gly Ile Phe Gly
                165                 170                 175
Phe Thr Asp Ser Asp Cys Ile Gly Lys Ile Ser Phe Pro Ala Ile Gln
            180                 185                 190
Ala Ala Pro Ser Phe Ser Asn Ser Phe Pro Gln Ile Phe Arg Asp Arg
        195                 200                 205
Thr Asp Ile Gln Cys Leu Ile Pro Cys Ala Ile Asp Gln Asp Pro Tyr
    210                 215                 220
Phe Arg Met Thr Arg Asp Val Ala Pro Arg Ile Gly Tyr Pro Lys Pro
225                 230                 235                 240
Ala Leu Leu His Ser Thr Phe Phe Pro Ala Leu Gln Gly Ala Gln Thr
                245                 250                 255
Lys Met Ser Ala Ser Asp Pro Asn Ser Ser Ile Phe Leu Thr Asp Thr
            260                 265                 270
Ala Lys Gln Ile Lys Thr Lys Val Asn Lys His Ala Phe Ser Gly Gly
        275                 280                 285
Arg Asp Thr Ile Glu Glu His Arg Gln Phe Gly Gly Asn Cys Asp Val
    290                 295                 300
Asp Val Ser Phe Met Tyr Leu Thr Phe Phe Leu Glu Asp Asp Asp Lys
305                 310                 315                 320
Leu Glu Gln Ile Arg Lys Asp Tyr Thr Ser Gly Ala Met Leu Thr Gly
                325                 330                 335
Glu Leu Lys Lys Ala Leu Ile Glu Val Leu Gln Pro Leu Ile Ala Glu
            340                 345                 350
His Gln Ala Arg Arg Lys Glu Val Thr Asp Glu Ile Val Lys Glu Phe
        355                 360                 365
Met Thr Pro Arg Lys Leu Ser Phe Asp Phe Gln Lys Leu Ala Ala Ala
    370                 375                 380
Leu Glu His His His His His His
385                 390
```

FIG. 8

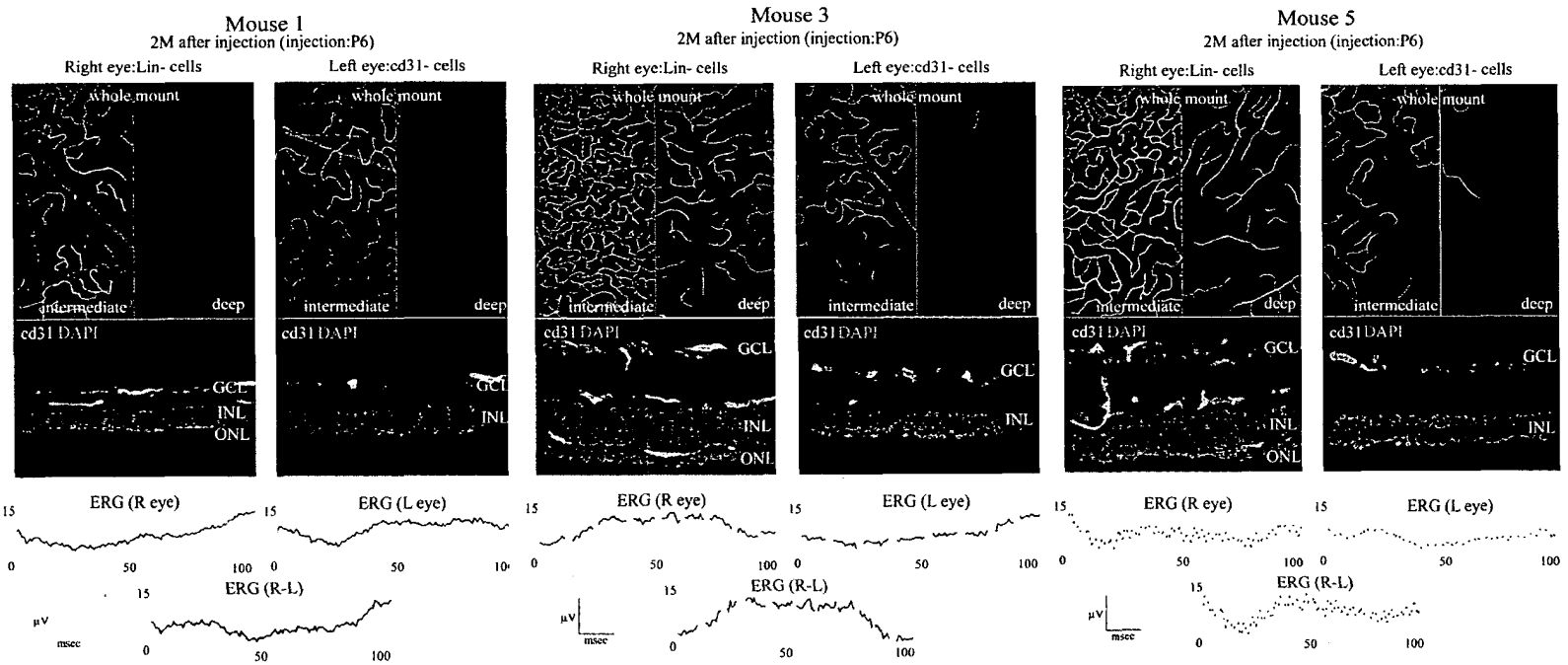
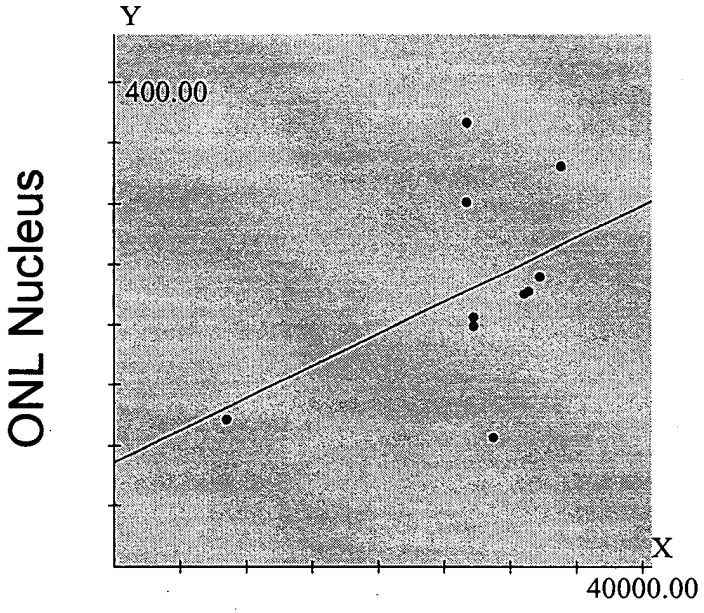

Mouse 1
2M after injection (injection:P6)
Right eye:Lin- cells
Left eye:cd31- cells
Mouse 3
2M after injection (injection:P6)
Right eye:Lin- cells
Left eye:cd31- cells
Mouse 5
2M after injection (injection:P6)
Right eye:Lin- cells
Left eye:cd31- cells
whole mount
intermediate
deep
cd31 DAPI
GCL
INL
ONL
ERG (R eye)
ERG (L eye)
ERG (R-L)
15
0
50
100
μV
msec

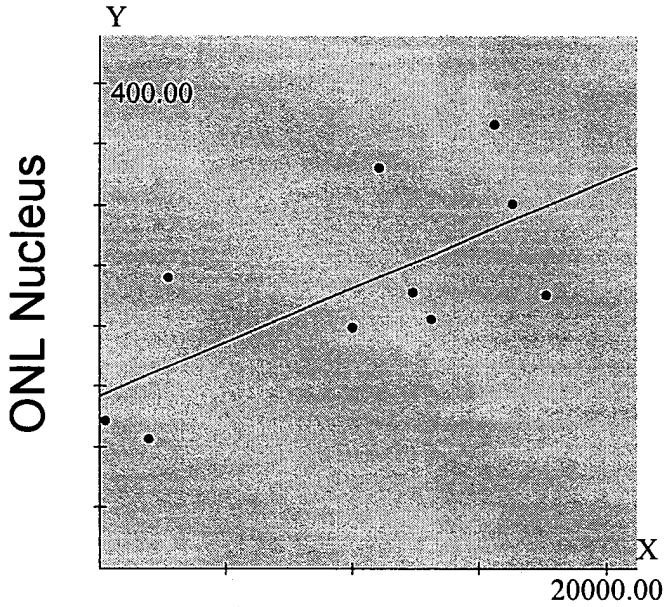
FIG. 9

Simple Regression Analysis –2M



Int. Vasculature

y=0.005328x+86.228974
r=0.452836
p=0.1888

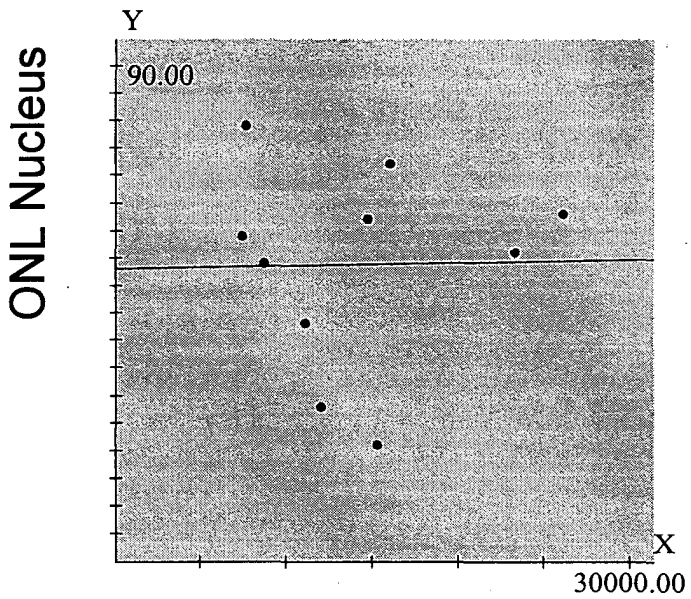


Deep Vasculature

y=0.008873x+142.327
r=0.669651
p=0.0342

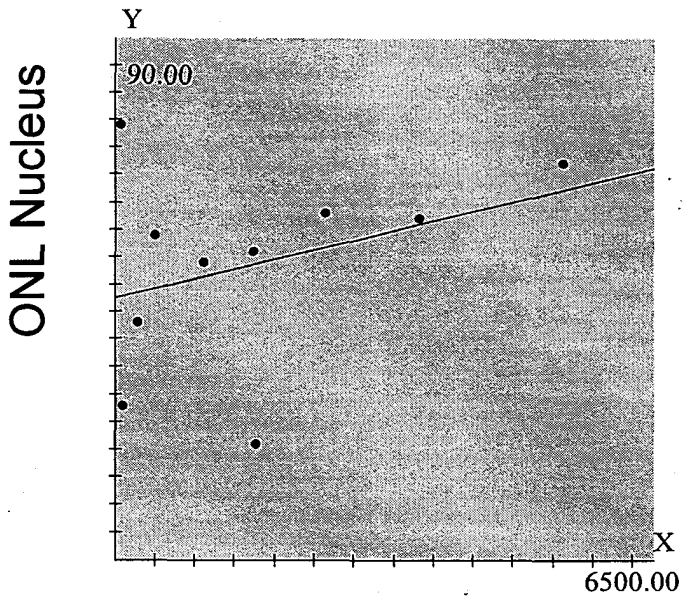
FIG. 10

Simple Regression Analysis – 2M Control



Int. Vasculature

y=0.000056x+52.905069
r=0.019418
p=0.9575



Deep Vasculature

y=0.003517x+47.465646
r=0.349191
p=0.3227

FIG. 11

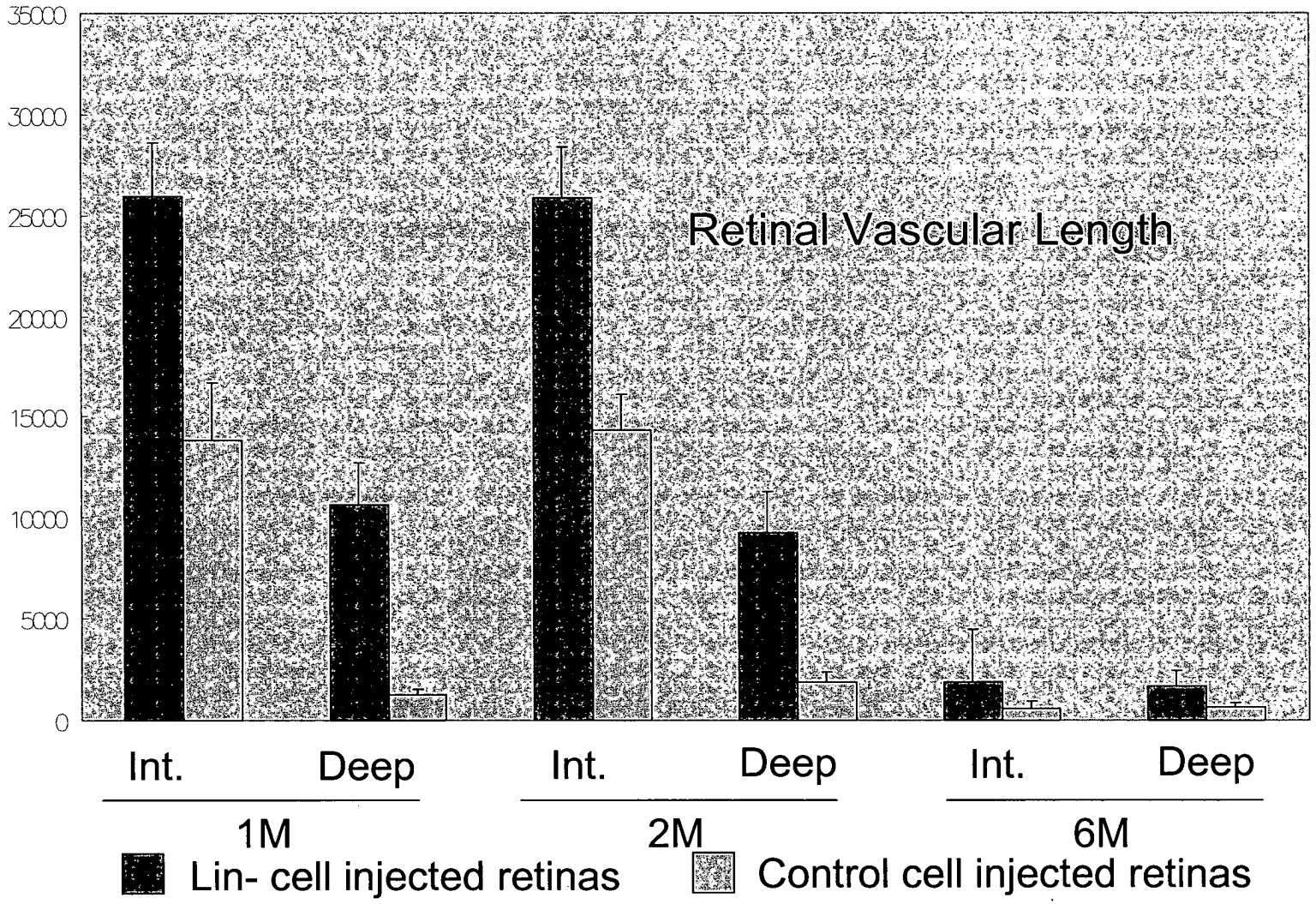

35000
30000
25000
20000
15000
10000
5000
0
Retinal Vascular Length
Int.
Deep
Int.
Deep
Int.
Deep
1M
2M
6M
Lin- cell injected retinas
Control cell injected retinas

FIG. 12

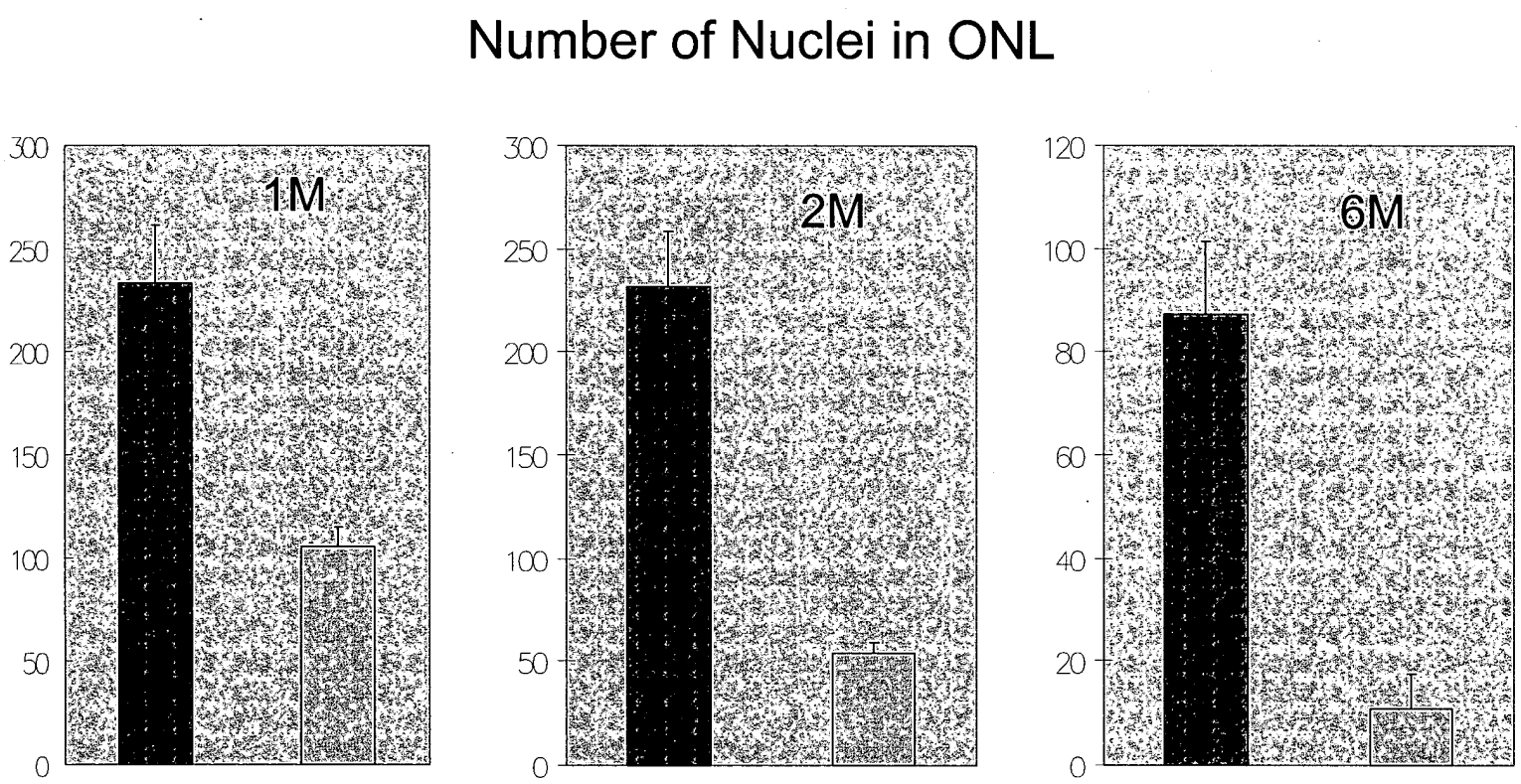

Number of Nuclei in ONL
1M
2M
6M
300
250
200
150
100
50
0
120
80
60
40
20
Lin- cell injected retinas
Control cell injected retinas
Mean + S.E

FIG. 13

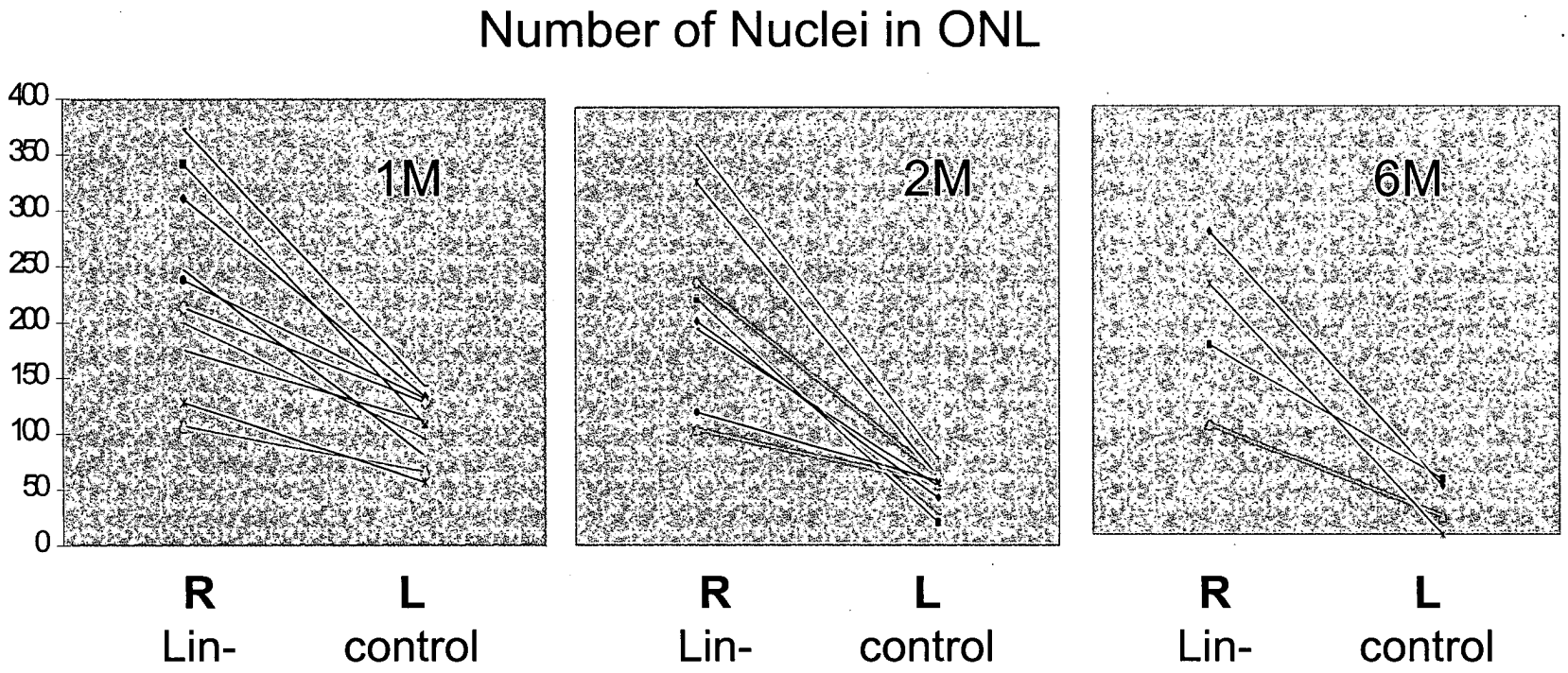

Number of Nuclei in ONL
400
350
300
250
200
150
100
50
0
1M
2M
6M
R
Lin-
L
control
R
Lin-
L
control
R
Lin-
L
control

FIG. 14